THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DANIEL W. BANKS, RICHARD M. WOOD
and STEVEN X. S. BAUER

Appeal No. 95-4237
Application 07/887,002[1]

ON BRIEF

Before ABRAMS, STAAB and McQUADE, *Administrative Patent Judges*.

STAAB, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-6, all the claims in the application.

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[1] Application for patent filed May 22, 1992.

Appellants' invention pertains to a device for controlling the pressure load on a member caused by movement of the member relative to a fluid, such member being, for example, a forebody, canopy, fuselage, wing, or tail of an aircraft. Independent claim 1, a copy of which is appended to appellants' brief, is illustrative of the subject matter on appeal.

The references of record relied upon by the examiner in support of rejections under 35 U.S.C. § 102(b) and 35 U.S.C. § 103 are:

Eknes	3,794,274	Feb. 26, 1974
Anxionnaz	3,951,360	Apr. 20, 1976
Lurz	4,664,345	May 12, 1987
Clites	4,726,548	Feb. 23, 1988
Miller et al. (Miller)	4,991,797	Feb. 12, 1991

The following rejections are before us for review:

(a) claims 1-6 under 35 U.S.C. § 102(b) as being anticipated by Anxionnaz;

(b) claims 1-6 under 35 U.S.C. § 102(b) as being anticipated by Miller;

(c) claims 1-5 under 35 U.S.C. § 102(b) as being anticipated by Eknes;

(d) claims 1-5 under 35 U.S.C. § 102(b) as being anticipated by Lurz; and

(e) claims 1-6 under 35 U.S.C. § 103 as being unpatentable over Clites in view of Lurz.

The rejections are explained on pages 3-7 of the answer.

The opposing viewpoints of appellants are set forth on pages 5-11 of the brief.

The § 102 rejections based on Anxionnaz, Miller or Eknes (rejections (a), (b) and (c))

We will not sustain any of these rejections.

Claim 1, the sole independent claim on appeal, calls for a porous outer skin separated from a solid inner surface by a plenum "such that fluid from a high pressure area on the surface of the member enters the plenum through the porous outer skin and exits the plenum through the porous outer skin into a low pressure area on the surface of the member." Claim 1 further calls for a transpirational control device "for controlling flow through the porous outer skin by regulating the conditions in the plenum such that the pressure load on

the member is controlled."

In rejecting claim 1 as being anticipated by Anxionnaz, Miller or Eknes, the examiner considers the blower 14 of Anxionnaz, the elements 12, 34 of Miller, and the valves 22a, 22b of Eknes as corresponding to the claimed transpirational control device. The examiner also takes the position that the holes or pores in the outer surface of each of the references will allow flow to move in either direction depending on the pressure differential present (answer, pages 3 and 4). In this latter regard, the examiner further explains on pages 6-7 that

> [w]hat is being claimed is that . . . a member subject to pressure loads has a porous surface where flow can go in and out, which is true of any surface with holes in it and is setting in a flow that fluctuates[,] thus fluctuating the pressure around it and thus flow in and out of the holes. It is also noted as stated above that the claims do not specify any structure or means that would cause flow in and out of the same holes as continually argued by the Appellant.

Based on the above, it is apparent that the examiner's anticipation rejections based on Anxionnaz, Miller and Eknes raise a question of inherency with respect to the reference structures. Inherency may not be established by probabilities

or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. *In re Oelrich,* 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981). We are mindful that there is a line of cases represented by *In re Swinehart,* 439 F.2d 210, 213, 169 USPQ 226, 229 (CCPA 1971) which indicates that where an examiner has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, the examiner possesses the authority to require an applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on. Nevertheless, before shifting the burden to appellant, the examiner must provide some evidence or scientific reasoning to establish the reasonableness of the examiner's belief that the functional limitation is an inherent characteristic of the prior art. In the case before us, no such evidence or reasoning has been set forward with respect to Anxionnaz, Miller or Eknes.

Anxionnaz pertains to a device for preventing the

boundary layer over the surface of a body of an aircraft in flight from acquiring the thickness of which changeover into turbulence can be produced (column 1, lines 44-48). To this end, a series of rearwardly facing orifices 3 are provided in the wing of the aircraft, which orifices communicate with one of several hollow interior portions 12 (see Figures 8 and 9) of the wing. Portions 12 are in fluid communication with the low pressure or suction side of a blower 14 driven by a motor 15. The blower lowers the pressure in the hollow interior wing portions 12 such that a portion of the boundary layer flow is drawn off through each of the orifices 3. The blower delivers the drawn off flow to a propulsion nozzle 17 oriented in the opposite direction to that of the absolute velocity of the aircraft. A plurality of independently adjustable hinged flaps can be provided at the connection between each portion 12 and the blower so that the flow from the respective portions can be independently varied.

Miller relates to “cooling of aerodynamically heated surfaces,” and in particular to “surface cooling for infrared signature reduction using a combination of pressure and temperature induced phase change of a coolant from liquid to

vapor in a transpiration cooled skin" (column 1, lines 6-11). For this purpose, liquid coolant under pressure is provided from a storage tank 10 through valves 40 to a plurality of plenum chambers 50. The liquid coolant is maintained in contact with the inner surface 48 of the porous skin of the vehicle. The liquid coolant flows through the porous skin toward the outer surface thereof, but vaporizes before it reaches the outer surface. "The transpired vapor 30 exits through the aerodynamic surface of the skin, is entrained into the boundary layer flow and is swept downstream along the outer surface of the skin providing a film cooling region 32 on adjacent solid wall sections 20 as shown in FIG. 1" (column 4, lines 17-22). Storage tank 10 is kept under pressure by a pressure vessel 12. Control of liquid coolant flow to the plenum chambers is accomplished by a pressure regulator 34 provided between the pressure vessel and the storage tank.

Eknes pertains to a device for reducing sonic boom intensity. The device comprises nose portion 11 having a porous outer skin 15 separated from a solid inner surface 14 by a plenum 16. Air entering the plenum via the holes 13 in

the nose portion is directed by directional valves 22a, 22b either (1) along the length of the fuselage until it exits through tail portion 17, or (2) to channels in the wings 20 and then to the jet engine compressors 21. Depending on the cross-section of the nose surface, an air pump or similar device may be utilized in the plenum (column 3, lines 12-18). In Figure 9, Eknes discloses an alternative embodiment wherein the plenum chamber does not extend beyond the nose, and wherein exit apertures 13a are provided on the fuselage skin 15 substantially to the rear of the intake apertures 13 such that fluid flow exists out of the plenum. In this alternative embodiment, "the continuous passageways along the length of the fuselage 12 are eliminated, but a substantial degree of venting of the surface area of the nose 11 remains" (column 5, lines 39-42).

Turning to the examiner's rejections, we appreciate the point the examiner is trying to make with respect to the theoretical possibility of fluid flow into and out of the holes 3 of Anxionnaz's device, the porous skin of Miller, and the holes 13 of Eknes's device. However, the examiner's position that the reference structures would be capable of

functioning in the manner set forth in claim 1 does not appear to take into account the reference structures in their entirety. In this regard, Anxionnaz's blower 14 "maintain[s] a pressure slightly lower than that which is created by the speed of flow at the inlets to these orifices [3]" (column 1, lines 65-68) so that a small fraction of boundary layer flow is drawn in through each of the orifices (column 2, line 65 through column 3, line 5). The blower delivers this air flow in the opposite direction to the propulsion nozzle 17 (column 6, lines 36-38). This operation certainly would appear to have an impact on the ability of the orifices 3 of Anxionnaz to function in the manner called for in claim 1. Further, the presence of the liquid coolant in the plenum chambers and pores of Miller would appear to have an impact on the ability of Miller's porous skin to function in the manner called for in claim 1. As to Eknes, the operation of the jet engine compressors when plenum air is directed into channels 19, and the presence of the large exit port in the tail portion of the aircraft when plenum air is directed along the fuselage, would likewise appear to have an impact on the ability of Eknes's

device to function in the manner called for in claim 1.[2] In light of these disclosures, the examiner anticipation rejections based on Anxionnaz, Miller or Eknes are, at best, speculative. Accordingly, a *prima facie* case of anticipation based on Anxionnaz, Miller or Eknes has not been established. *See In re Oelrich, supra.*

The § 102 rejection based on Lurz (rejection (d))

We will sustain this rejection.

Lurz pertains to a method for stabilizing laminar flow over a disturbance in the surface contour of a body in the flow, e.g., where sheet metal layers overlap in the surface of an aircraft wing. This is accomplished by providing a suction inlet section 6 in the form of a series of small openings in the body just upstream from the surface disturbance 1 in a high pressure zone 4, a blowing outlet section 6' in the form

[2] With respect to Eknes, while Figure 9 thereof illustrates fluid flow both into the plenum chamber via holes 13 and out of the plenum chamber via holes 13a, the examiner is not understood to be relying on this embodiment in his anticipation rejection. In any event, this embodiment does not appear to include anything that can be regarded as corresponding to the transpirational control device required by claim 1.

of a series of small openings in the body just downstream from the surface disturbance in a low pressure zone 3, and an interconnection defined by quieting chambers 8, 8', flow channel 2 and throttle valve 7 for interconnecting the inlet and outlet sections. In operation, a portion of the boundary layer flow upstream of the surface disturbance is drawn off through the suction section 6, passes through the chamber 8, throttle valve 7, flow channel 2 and chamber 8', and is blown out the blowing section 6'. The throttle valve is stated to control the flow quantity through the channel 2 (column 4, lines 47-49). "The transport of boundary material layer through the flow channel 2 is assured due to the pressure differential)C_p between the suction inlet zone 4 and the blow outlet zone 3" (column 4, lines 49-52).

In rejecting claim 1 as being anticipated by Lurz, the examiner has found, and appellants have not disputed, that (1) the inlet and outlet sections 6, 6' constitute a porous outer skin, (2) the inner surface of the channel 2 constitutes a solid inner surface, (3) the flow channel 2 itself constitutes a plenum separating the porous outer skin from solid inner surface, and (4) the throttle valve 7 constitutes a

transpirational control device. As to the flow of fluid with respect to the porous skin and plenum in Lurz, clearly the sections 6, 6′ and interconnection 2, 7, 8, 8′ of Lurz are arranged such that fluid from a high pressure area (high pressure zone 4) on the surface of the member enters the plenum (flow channel 2) through the porous outer skin (at suction inlet 6) and exits the plenum through the porous outer skin (at blowing outlet 6′) into a low pressure area (low pressure zone 3) on the surface of the member 5, as called for by claim 1. In addition, in that the throttle valve 7 of Lurz controls a condition (flow quantity) in the plenum that affects pressure upstream and downstream of the surface disturbance 1, the valve reasonably appears to be capable of controlling pressure load on the member 5, at least to some degree, as called for in the last paragraph of claim 1. In light of the foregoing, the examiner's rejection of claim 1 as being anticipated by Lurz is well founded.

Appellants' arguments on pages 10-11 of the brief with respect to the rejection based on Lurz are not persuasive that the examiner erred in rejecting claim 1 as being anticipated by Lurz. While we appreciate that there may very well be

differences in operation between Lurz's device and appellants' disclosed device, these alleged differences are not reflected in claim language appellants have chosen to use. The law of anticipation does not require that the reference teach specifically what an appellant has disclosed and is claiming but only that the claims on appeal "read on" something disclosed in the reference, i.e., all limitations of the claim are found in the reference. *See Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), *cert. denied*, 465 U.S. 1026 (1984), *(and overruled in part on another issue)* 775 F.2d 1107, 227 USPQ 577 (Fed. Cir. 1985). This is the case here with respect to the Lurz reference, in our view.

We will also sustain the examiner's § 102 rejection of claim 3 based on Lurz since appellants state (brief, page 4) that this claim will stand or fall with base claim 1. In addition, we will sustain the examiner's § 102 rejection of claim 2 based on Lurz since appellants have not argued this dependent claim with any reasonable degree of specificity apart from claim 1. *See, for example, In re Nielson*, 816 F.2d

1567, 1572, 2 USPQ2d 1525, 1528 (Fed. Cir. 1987).

As to claims 4 and 5, appellants state on page 10 of the brief that "[t]he present invention is not used to control boundary layer separation [as in Lurz] and the holes are larger than 1000 microns (Claims 4 and 5)." Neither of claims 4 and 5 calls for the perforations in the outer skin to be larger than 1000 microns, and this limitation cannot be read thereinto. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969). Accordingly, appellants' statement, to the extent it may considered a separate argument for patentability of claims 4 and 5, is not commensurate in scope with the invention as claimed. In that features not claimed may not be relied upon in support of patentability (*In re Self*, 671 F.2d 1344, 1348, 213 USPQ 1, 5 (CCPA 1982)), as argued, we will also sustain the examiner's rejection of claims 4 and 5 as being anticipated by Lurz.

The § 103 rejection based on Clites and Lurz (rejection (e))

We will not sustain this rejection.

An objective of Clites is to provide a simple means for controlling the boundary layer air flow over an airfoil, with

no moving parts or airfoil shape changes being required (column 1, lines 27-30). To this end, perforations are provided in the airfoil, and the interior of the airfoil is sectioned off by partitions into a forward chamber 25 and a rearward chamber 26, with the chambers in communication via a plenum chamber 127 at the tip of the airfoil. In addition, an air outlet 31 is formed in the plenum chamber at the outermost end of the airfoil. In operation, air enters the forward chamber via the perforations in response to forward travel of the airfoil through the atmosphere, exits through the plenum chamber 127 and air outlet 31, and in the process "induce[s] air to enter the second [rearward] chamber via perforations or slots 30, efficiently removing boundray [sic, boundary] layer air from over the [rear of the] airfoil" (column 2, lines 59-63).

In rejecting claims 1-6 as being unpatentable over Clites in view of Lurz, the examiner has considered that it would have been obvious "to provide the chambers of Clites with a valve as taught by Lurz [at valve 7] since it would provide additional control" (answer, page 6). Implicit in the rejection is the examiner's position that the proposed

modification would result in a device that corresponds in all respects to that which in claimed.

In view of the disparate structures and objectives of Lurz and Clites, it is not clear to us why one of ordinary skill in the art would have found the proposed modification desirable, and thus obvious. Further, it is not clear how a throttle valve like that disclosed by Lurz at valve 7 would be incorporated into Clites, nor is it apparent that the resulting structure would function in the manner called for in claim 1. In light of these deficiencies in the rejection, we cannot sustain this rejection.

Summary

Rejections (a), (b), (c) and (e) are reversed.

Rejection (d), namely, the rejection of claims 1-5 as being anticipated by Lurz, is affirmed.

The decision of the examiner is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

NEAL E. ABRAMS	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
LAWRENCE J. STAAB	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
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